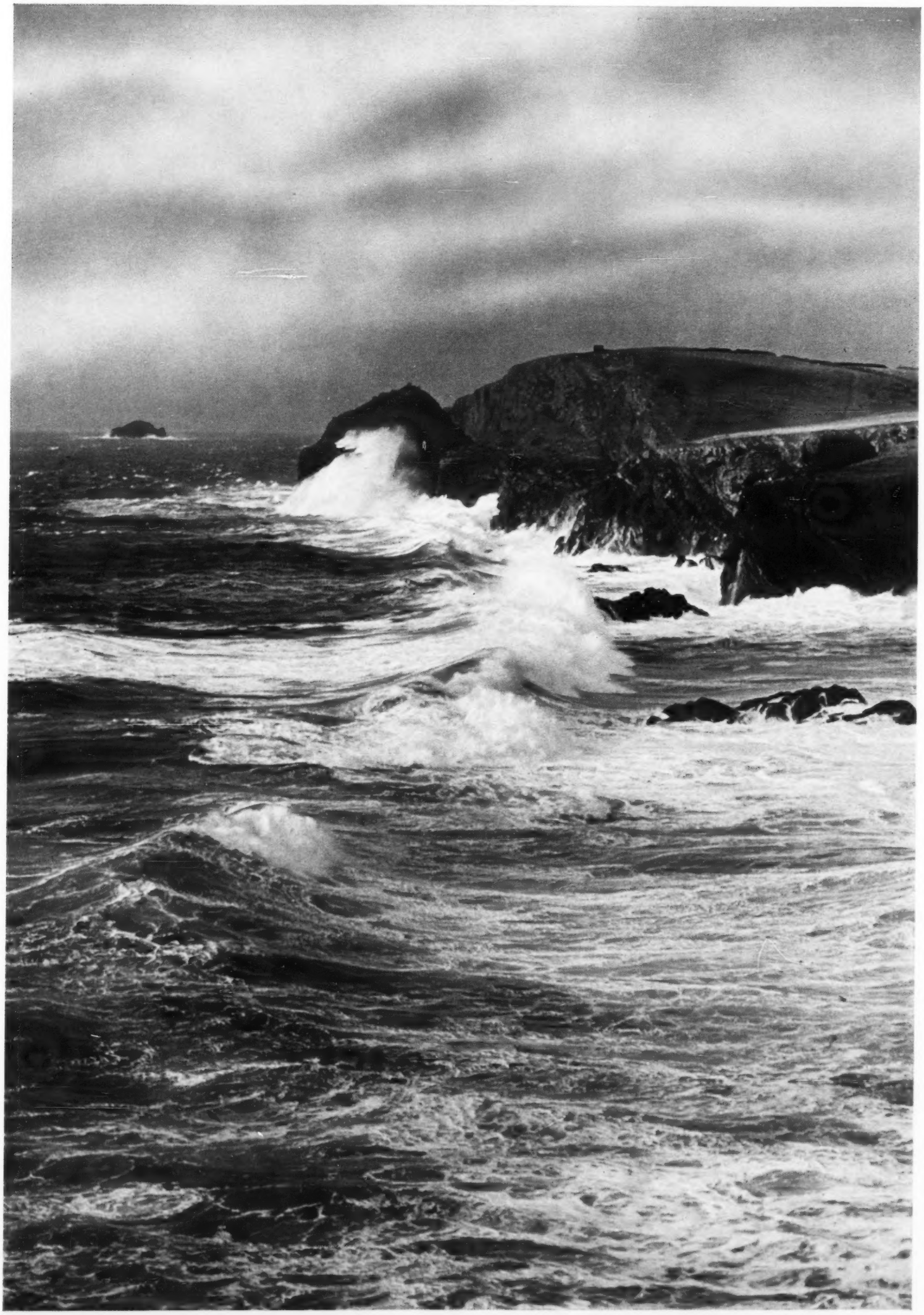

THE RESTLESS WAVES WHICH COVER A WORLD OF FANTASTIC BEAUTY.

On our western seaboard, from the Lizard to Cape Wrath, are many stretches of coast where long Atlantic rollers beat upon the ancient rocks. Great waves, raised by storms often thousands of miles away across the ocean, in summer bring out the surf-boards on the sandy beaches of North Cornwall and pile up the kelp on Scottish shores. When local westerly gales add height and force to these far-travelled waves, spectacular seas lash the coast, sending showers of spray over the high cliffs. Here, near Padstow, a setting sun breaking through heavy cloud brightens for an instant a scene of wild fury. [*Photograph by Douglas P. Wilson, F.R.P.S.*]

A SUBMARINE FANTASIA : STRANGE AND BEAUTI

FIG. 1. A GROUP OF ROSY FEATHER-STARS (*ANTEDON BIFIDA*), SURVIVORS OF AN ANCIENT GROUP OF ANIMALS, THE CRINOIDS, WHOSE REMAINS ARE ABUNDANT IN MANY LIMESTONE ROCKS.

THE twelve pictures reproduced on these pages from Kodachromes by Dr. Douglas P. Wilson, F.R.P.S., have been selected for the beauty of form and colouring of the animals and plants portrayed. All live in British seas ; these particular specimens came from the South Devon coast and were photographed alive as found on the shore at low tide, or as they displayed themselves in the marine aquarium tanks to which they had been removed. These organisms will be unfamiliar to most people, for they have no close relatives living on land and some not even in the fresh waters. Of at least half

[*Continued below.*

FIG. 2. A FINE GROWTH OF THE COMMON SHORE SPONGE, *HYMENIACIDON SANGUINEA*, EXPOSED IN A SHELTERED SOUTH DEVON ESTUARY BY A VERY LOW TIDE. THE SPONGE FEEDS BY PASSING WATER THROUGH INNUMERABLE PASSAGES, FILTERING FROM THIS WATER THE MICRO-ORGANISMS IN IT.

FIG. 5. PEACOCK WORMS (*SABELLA PAVONINA*) CAUTIOUSLY EXPANDING HEAD-FANS AT THE MOUTHS OF THEIR TUBES OF CEMENTED MUD. THE FANS TRAP MINUTE ORGANISMS FOR FOOD AND GATHER MUD PARTICLES FOR TUBE-BUILDING.

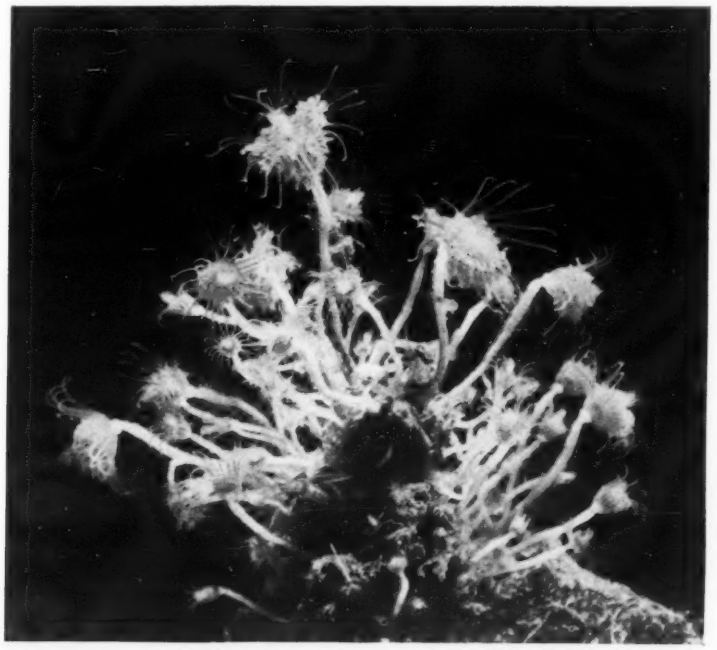

FIG. 6. THE OATEN-PIPES HYDROID (*TUBULARIA LARYNX*) GROWS ATTACHED TO ROCKS OR TO FLOATING OBJECTS AND IS A COMMON FOULING ORGANISM ON HULLS OF SHIPS. THIS IS A YOUNG COLONY, SHOWN ABOUT TWICE NATURAL SIZE ; OLDER COLONIES ARE LARGER, WITH MORE INDIVIDUAL POLYPS.

FIG. 9. THE DAHLIA ANEMONE (*TEALIA FELINA*) IS COMMON BETWEEN TIDE-MARKS. IT CAPTURES SMALL CRABS AND OTHER ANIMALS WITH ITS STINGING TENTACLES.

Continued.]

the species shown, it is probably true to say that none but a few biologists ever see them, and perhaps for a moment stop their investigations to enjoy the æsthetic beauty of their lovely forms. All are small and some in these pictures are enlarged as one would view them through a hand-lens. Thus we see the *Epizoanthus* (Fig. 3), too rare to have a common English name ; the *Clava* (Fig. 4) and the *Tubularia* (Figs. 6 and 7). All three are stinging animals, organically joined in colonies so that food collected by any one polyp feeds the colony as a whole. Like their near and much larger relative, the Dahlia Anemone (Fig. 9), they must wait

[*Continued above, right.*

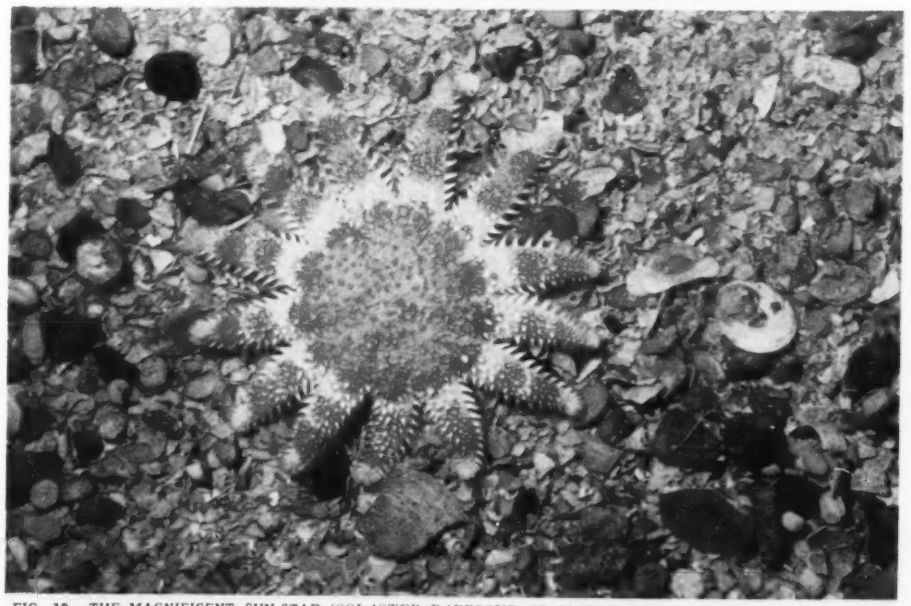

FIG. 10. THE MAGNIFICENT SUN-STAR (*SOLASTER PAPPOSUS*) IS COMMON IN BRITISH SEAS AND IS SOMETIMES FOUND ON THE SEASHORE. IT IS A VORACIOUS ANIMAL, FEEDING ON OTHER STARFISHES AND ON MOLLUSCS. IT GROWS TO ABOUT A FOOT ACROSS.

AUTIFUL ORGANISMS FROM THE UNDERSEA WORLD.

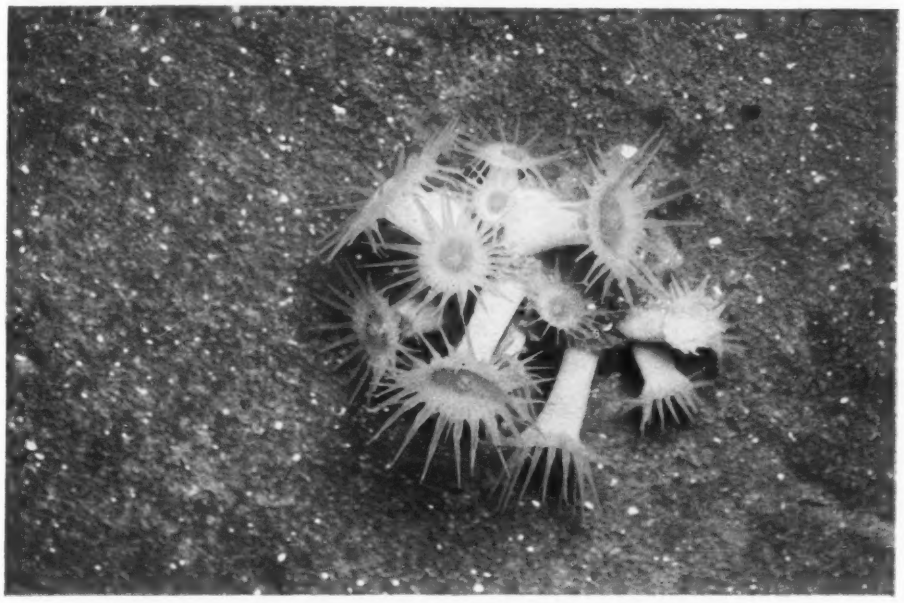

FIG. 3. A COLONY OF THE RARE *EPIZOANTHUS WRIGHTI* TAKEN BY A FREE-SWIMMING DIVER FROM A ROCK AT FOURTEEN FATHOMS OFF THE SOUTH DEVON COAST. RELATIVES OF THE SEA ANEMONES, THESE LITTLE POLYPS ARE HERE SHOWN SEVERAL TIMES LARGER THAN LIFE.

Continued.] patiently for a meal until some animal small enough to be overpowered brushes by chance against their tentacles. Instantly hundreds of poisoned threads are discharged into its body to paralyse and to kill. Sedentary animals such as these, attached permanently or semi-permanently to one place on rock or weed, are common in natural waters, both fresh and salt, where dense populations of swimming and floating animals and plants exist. Many different forms of animal life have filtering devices to utilise this living "soup," the plankton, which surrounds them everywhere. The two

[*Continued below.*

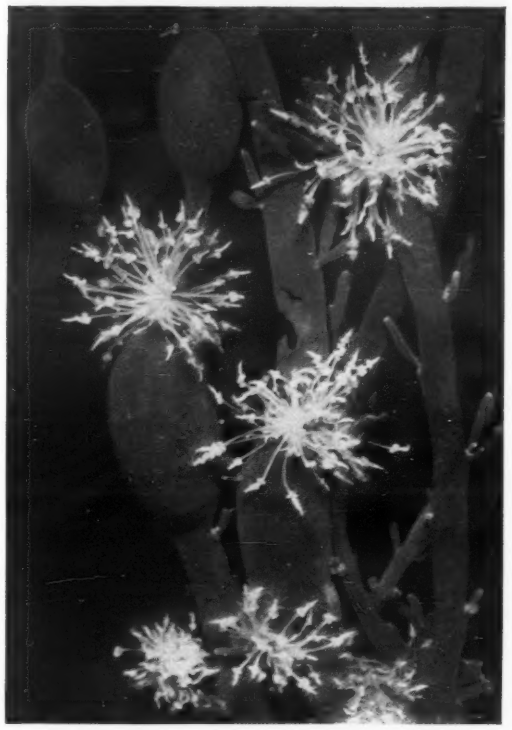

FIG. 4. TWO COLONIES OF THE CLUB-HEADED HYDROID (*CLAVA SQUAMATA*) ATTACHED TO SEAWEED FROM A SHELTERED SHORE IN SOUTH DEVON, AND SHOWN MAGNIFIED ABOUT THREE TIMES.

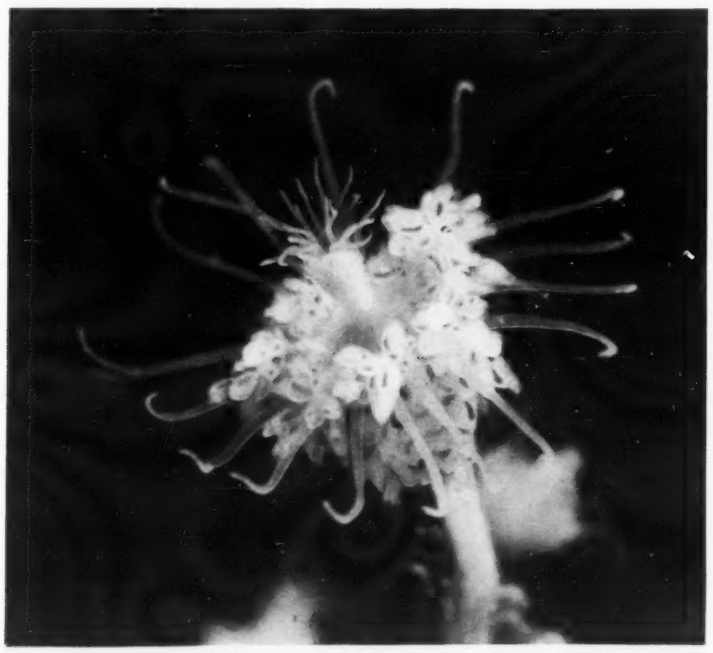

FIG. 7. THE LARGEST POLYP SEEN IN FIG. 6 IS HERE SHOWN AT HIGHER MAGNIFICATION. THE MOUTH IS SURROUNDED BY A CIRCLE OF STINGING TENTACLES; LOWER DOWN IS ANOTHER CIRCLE OF LARGER TENTACLES, AND BETWEEN THEM GRAPE-LIKE CLUSTERS OF REPRODUCTIVE ORGANS CONTAINING EMBRYOS.

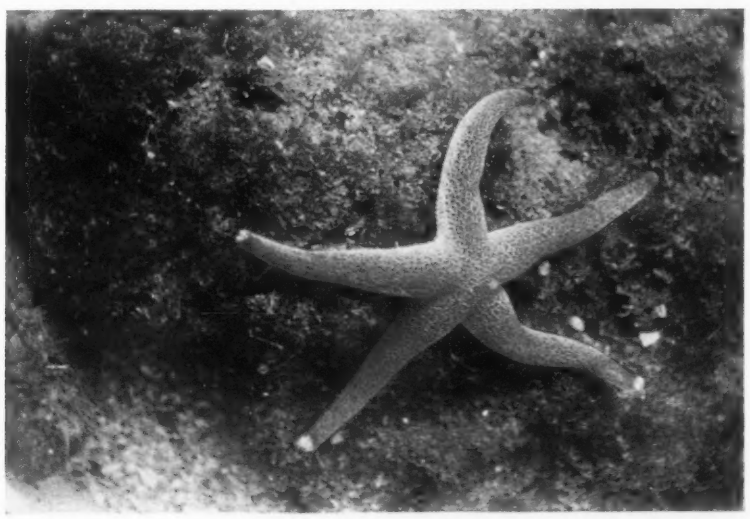

FIG. 8. THE SO-CALLED "SCARLET" STARFISH (*HENRICIA SANGUINOLENTA*) VARIES MUCH IN COLOUR. IT IS FAIRLY COMMON ON THE SEASHORE, AND IN DEEPER WATER AROUND THE BRITISH ISLES AND IN NORTH ATLANTIC REGIONS GENERALLY.

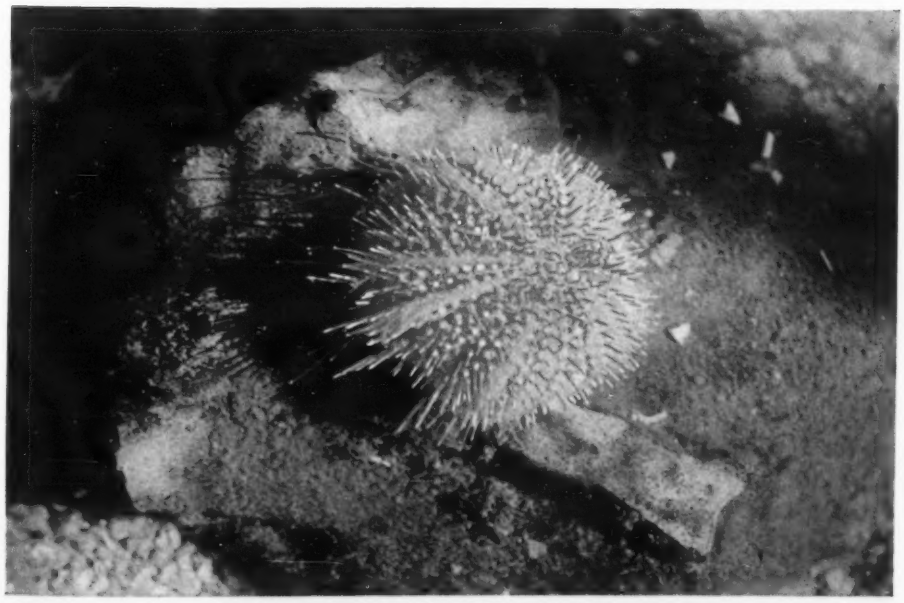

FIG. 11. THE EDIBLE SEA-URCHIN (*ECHINUS ESCULENTUS*) IS SO NAMED BECAUSE THE ROES ARE SOMETIMES EATEN. RELATED TO STARFISHES, IT IS STRUCTURALLY A HOLLOW BALL OF LIMY PLATES STUDDED WITH MOVABLE SPINES AND IS PULLED ALONG BY EXTENSILE TUBE-FEET.

Continued.] sponges (Figs. 2 and 12) shown here, the Peacock Worms (Fig. 5) and the delicate Feather-stars (Fig. 1) each have their own special methods of sieving the sea. So, too, have mussels, cockles, oysters and their kin, and hosts of other filter feeders which clothe the rocks or carpet the ocean floor. An army of creeping animals feed on these filterers, or on one another; they include the colourful starfishes (Figs. 8 and 10) and the almost spherical sea-urchin (Fig. 11), handsome in spite of its prickles. Thus creatures which to our eyes appear as lovely and as tranquil as a garden flower are in their several ways as voracious as any tiger.

FIG. 12. A SEA-LETTUCE (*ULVA LACTUCA*) ATTACHED TO A SPONGE (*HALICHONDRIA BOWERBANKI*). THIS SEAWEED HAS BEEN EATEN AS A SALAD, BUT CANNOT BE RECOMMENDED.

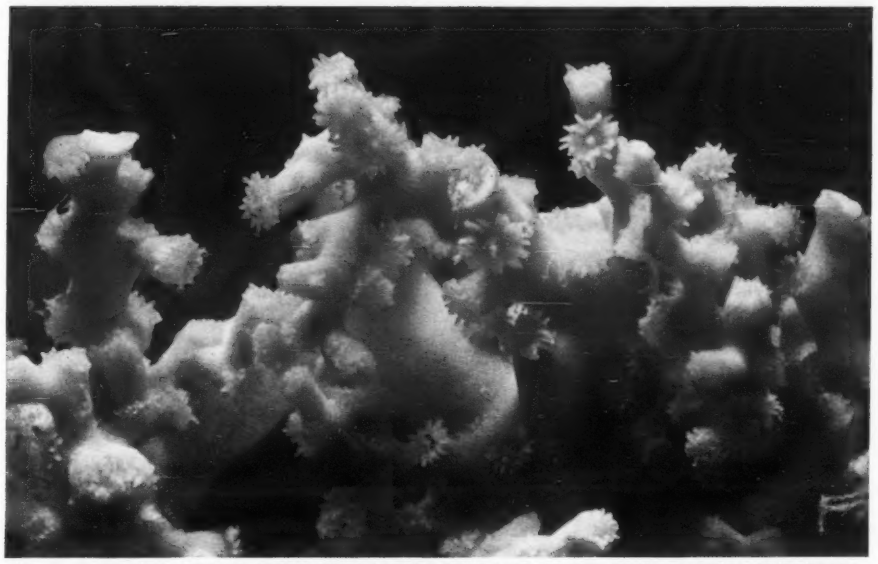

FIG. 1. A PORTION, TWO OR THREE TIMES LARGER THAN LIFE, OF THE DEEP-SEA CORAL *MADREPORA OCULATA* WITH POLYPS EXPANDED. ONLY A THIN LAYER OF TISSUES COVERS THE HARD, LIMY SKELETON. THIS CORAL DOES NOT BUILD SHALLOW-WATER REEFS SUCH AS DO RELATED TROPICAL SPECIES.

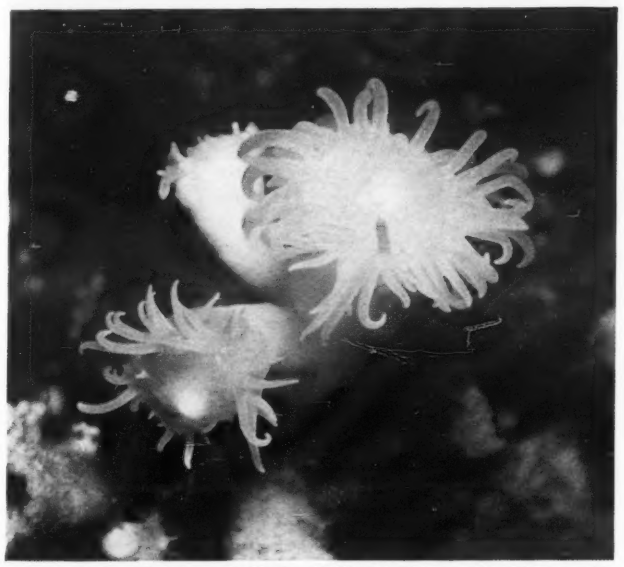

FIG. 2. ANOTHER DEEP-SEA CORAL, *DENDROPHYLLIA CORNIGERA*, HAS LARGER POLYPS OF A STRIKING COLOUR. THIS CORAL FORMS IRREGULARLY-BRANCHED COLONIES OF CONSIDERABLE SIZE, ONLY A FEW POLYPS OF WHICH ARE SEEN HERE, MAGNIFIED TWO OR THREE TIMES.

FIG. 3. THIS LITTLE STARFISH, *CERAMASTER PLACENTA*, FROM EIGHTY FATHOMS NEAR THE BAY OF BISCAY, HAS LIVED FOR OVER A YEAR IN AN AQUARIUM TANK IN PLYMOUTH. ALMOST NOTHING IS KNOWN OF ITS HABITS IN NATURE.

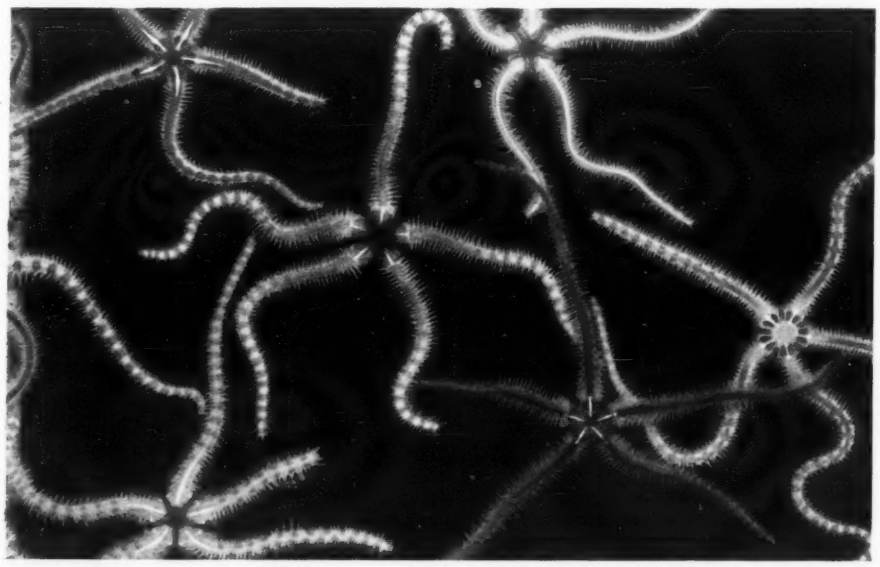

FIG. 4. SOME SELECTED SPECIMENS OF THE COMMON BRITTLE-STAR (*OPHIOTHRIX FRAGILIS*), WHICH VARIES GREATLY IN COLORATION AND WHICH IN FAVOURED LOCALITIES CARPETS THE SEA-FLOOR WITH IMMENSE CONGREGATIONS OF OVERLAPPING INDIVIDUALS. THE UNDERWATER CAMERA USED OFF PLYMOUTH HAS RECENTLY REVEALED BRITTLE-STAR PATCHES MILES ACROSS.

FIG. 5. CONTRASTING WITH THE SEA-FLOOR ANIMALS SHOWN PREVIOUSLY ARE THESE THREE SPECIMENS OF THE FLOATING VIOLET SEA-SNAIL (*IANTHINA JANTHINA*), STRANDED ON A SHORE IN NORTH CORNWALL LAST AUGUST AFTER A LONG PERIOD OF WESTERLY WINDS WHICH HAD BLOWN THEM SHOREWARDS OUT OF THE ATLANTIC.

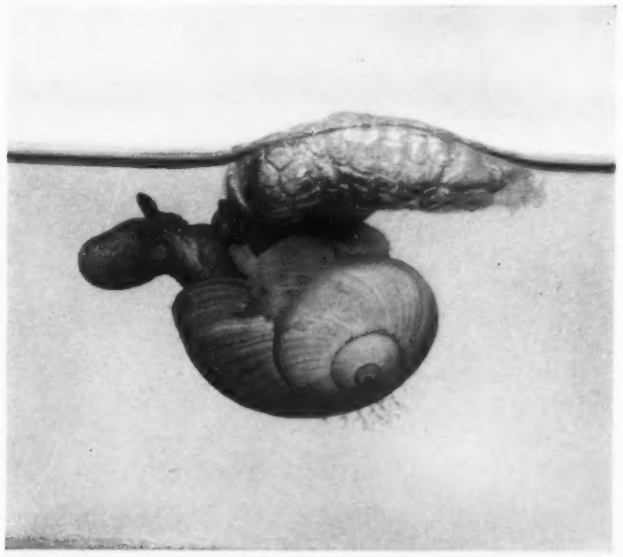

FIG. 6. THE VIOLET SEA-SNAIL (*IANTHINA JANTHINA*) LIVES AT THE SURFACE OF THE OCEAN, CLINGING UPSIDE-DOWN TO A STIFF, FROTHY RAFT OF AIR BUBBLES, AND IN THIS INVERTED POSITION DRIFTS WHEREVER WIND AND CURRENT TAKE IT.

SNAILS, CORALS AND STARFISH: CREATURES OF DEEP SEA-FLOOR AND SURFACE.

From the sea-bottom and from the ocean surface come the animals illustrated on this page, all probably photographed alive in colour for the first time. Except for the Common Brittle-stars (Fig. 4), which are to be found on the seashore as well as in deeper water, all these species are rarely seen alive, for they live, often far from land, where only ships fitted with special equipment can normally collect them. The deep-sea corals (Figs. 1 and 2) were dredged from a depth of 215 fathoms on the La Chapelle Bank, just north of the Bay of Biscay, and the little *Ceramaster* starfish (Fig. 3) came from the same geographical region. The number of animals living on the sea-floor and in mid-water is vast, but there is only a small and specialised fauna living at the ocean surface. This we but rarely see near our coasts, except when winds persistently blowing out of the ocean drift some of it to our shores, as happened in the summer of 1954, when large numbers of Violet Sea-snails (Figs. 5 and 6) stranded along the north coasts of Cornwall and Devon. They are about the size of a garden snail but with much more fragile shells, deeply pigmented on the part which would normally be underneath and which, on account of the upside-down habit of the owner, faces up towards the sky. Violet Sea-snails feed on *Velella* ("By-the-wind-sailor"), a relative of the jelly-fish and another member of the fauna of the ocean surface.

Written and photographed by Douglas P. Wilson, D.Sc., F.R.P.S.